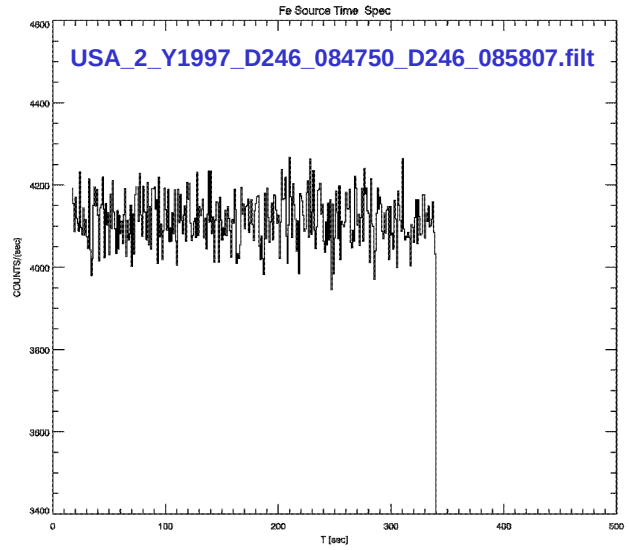
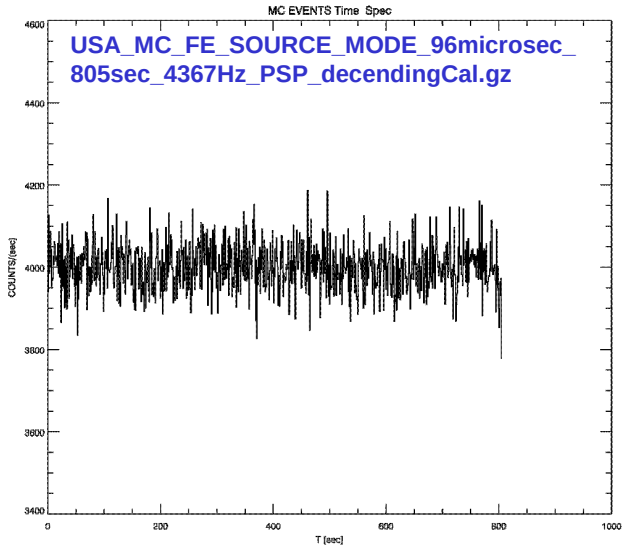
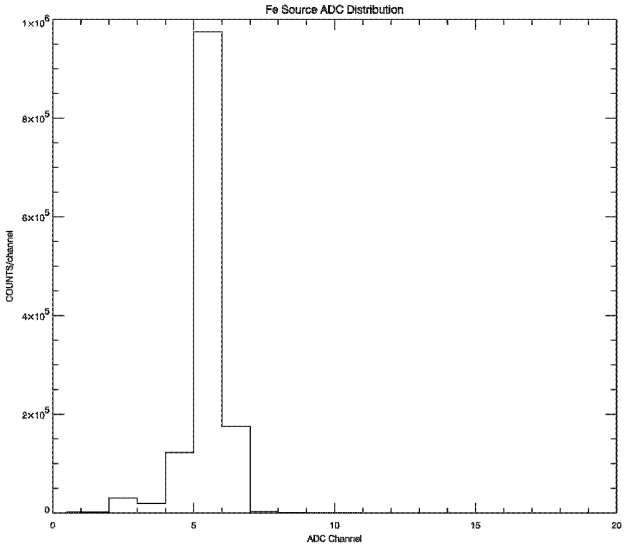
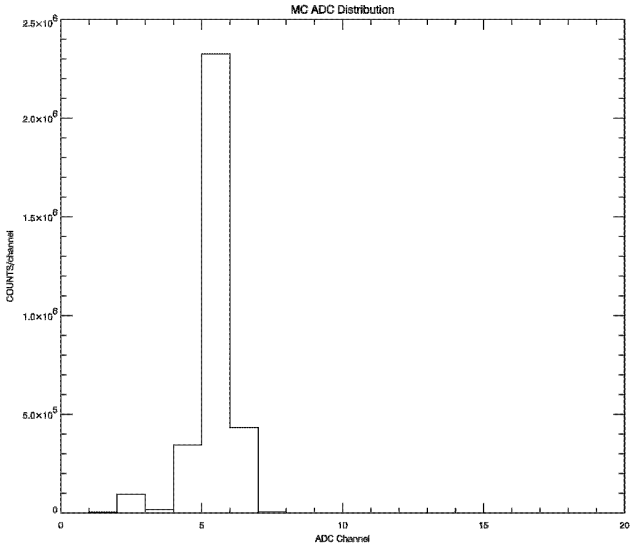
Fit the Tvac Pulse Shape: April 16-April 24, 2001

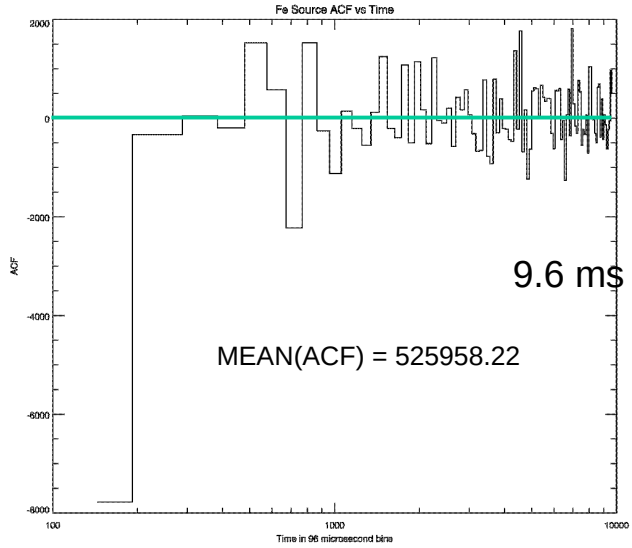
1. Run long Tvac mode 2 files to better define pulse shape.
2. Determine pulse shape needed to simulate Tvac data.
3. Check with Crab MC data and Crab real data.

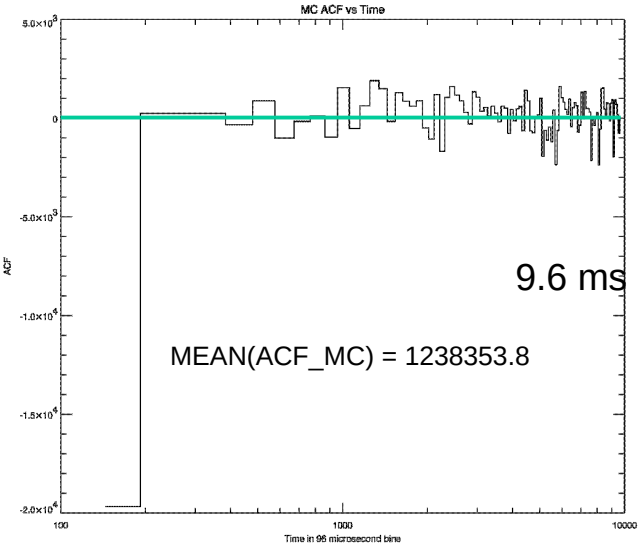


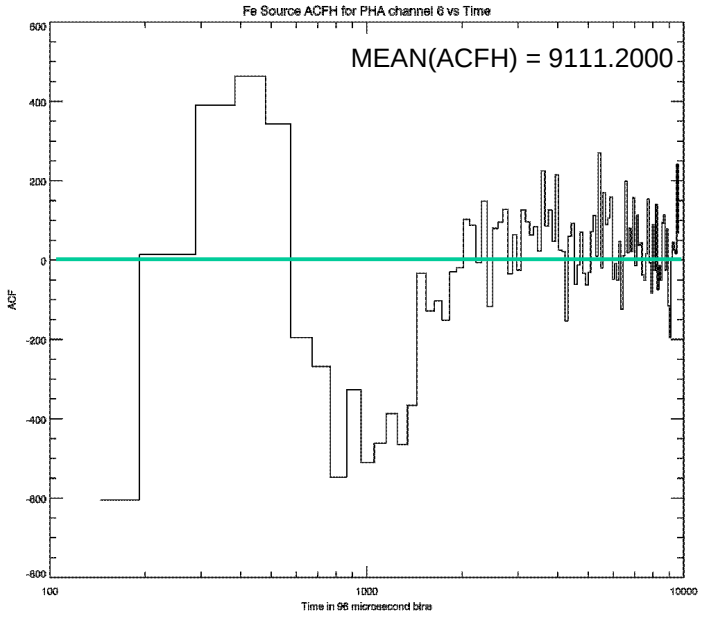


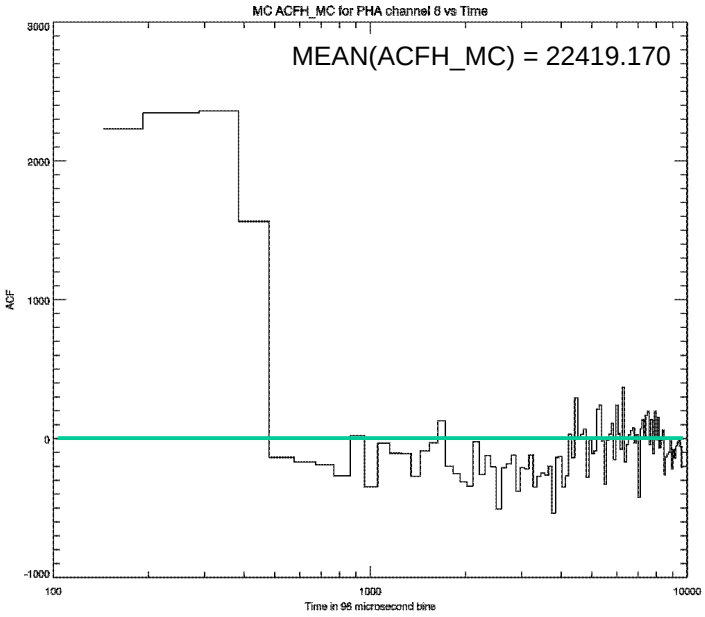


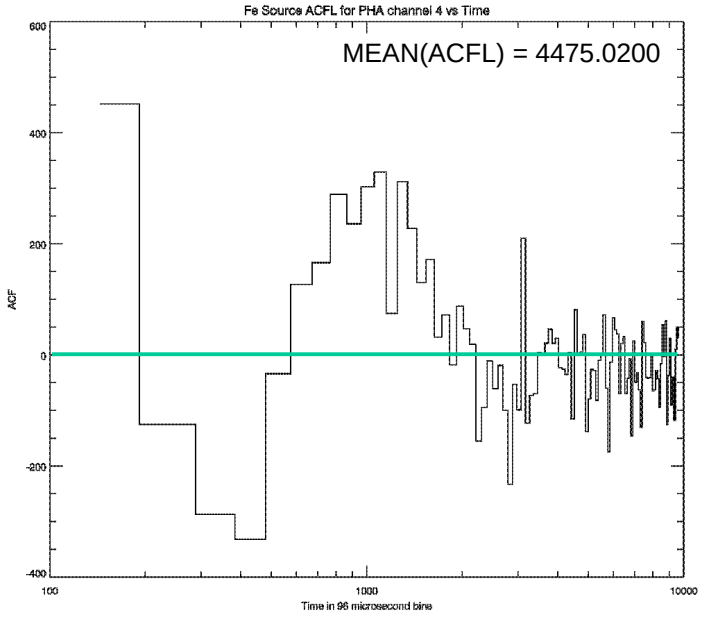


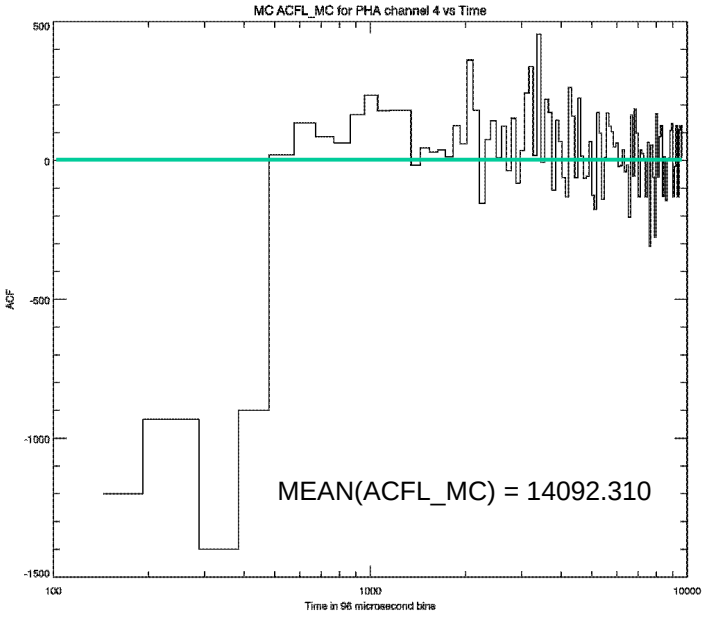





Fe Source ACFH for PHA channel 6 vs Time
MEAN(ACFH) = 9111.2000
ACF
Time in 96 microsecond bins

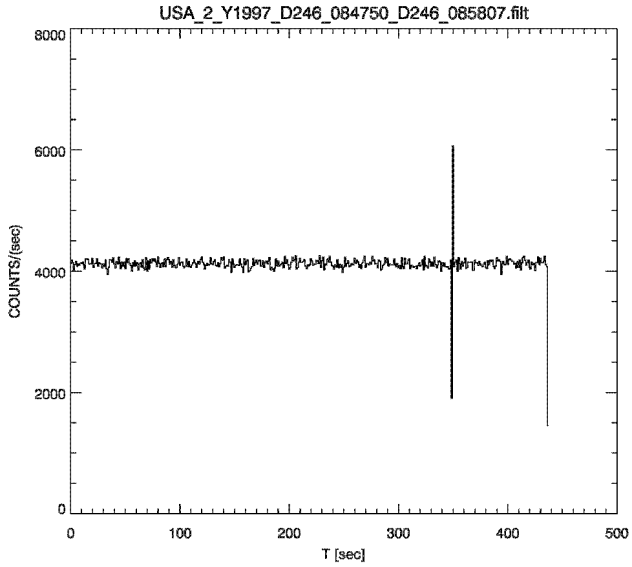

MC ACFH_MC for PHA channel 6 vs Time
MEAN(ACFH_MC) = 22419.170
ACF
Time in 96 microsecond bins

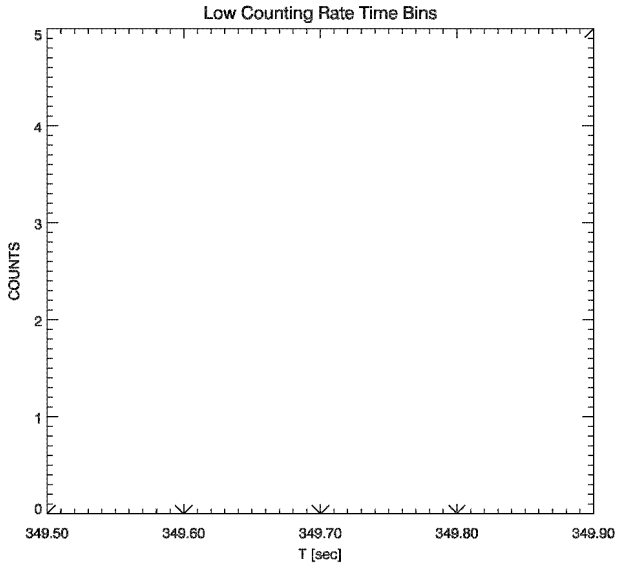

Fe Source ACFL for PHA channel 4 vs Time
MEAN(ACFL) = 4475.0200
ACF
Time in 96 microsecond bins

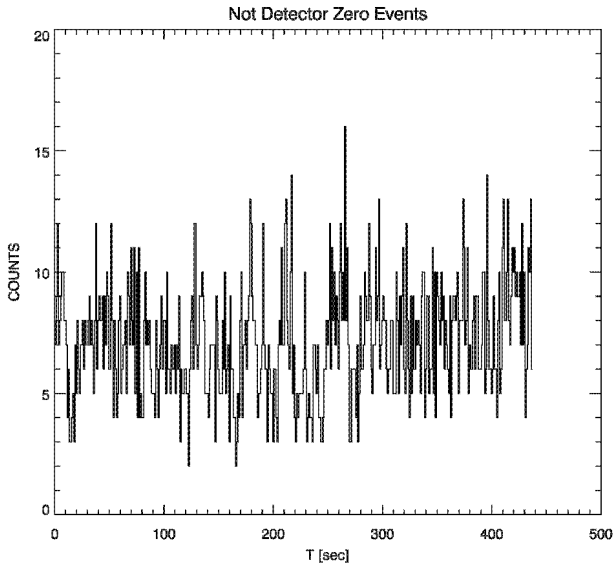

MC ACFL_MC for PHA channel 4 vs Time
MEAN(ACFL_MC) = 14092.310
ACF
Time in 96 microsecond bins

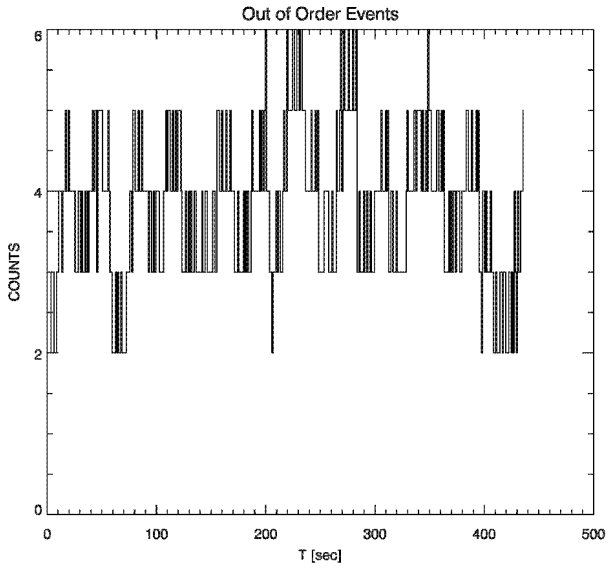
I have spent the past few days last week fretting about the status of the TVAC fits files, and having extended discussions with Kaice, Pablo and Warren about the status of DatToFits, and out of order events. I have been inventing diagnostics to try to get a feeling about the problems that Kaice has been trying to fix. In particular, I have been more carefully examining the Mode 2 TVAC file that Ganya and I (later) used to generate the ACF that seemed to imply pileup problem in the USA amplifier -> ADC chain. If I use this same file to generate a distribution of -Delta Times (-DT) for out of time events (defined as two successive events in the data stream with a negative DT between them), I get the plot on the bottom left of the 6 plots I am including on page 4. The famous ACF plot from Ganya's thesis (my version) is the bottom right plot. The other plots should be self explanatory and give additional info about this file from the light curve to the time distribution of out of order events. Note that this file contains detector 1 events which I remove before making the ACF. It is disconcerting to me that there are spikes in the -DT distribution binned in 96 microsecond bins, at very similar times as where there are positive excesses in the ACF, also binned in 96 microsecond bins. I am now starting to look at Crab data with one detector operational to see if I get similar results. Any thoughts?

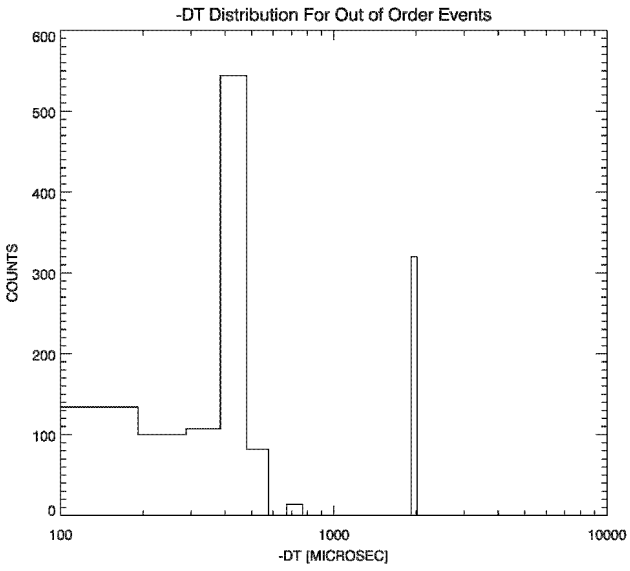
File used by Ganya and Elliott (later) to make ACF that
Showed Anomoly - see bottom right figure, compare with bottom left.

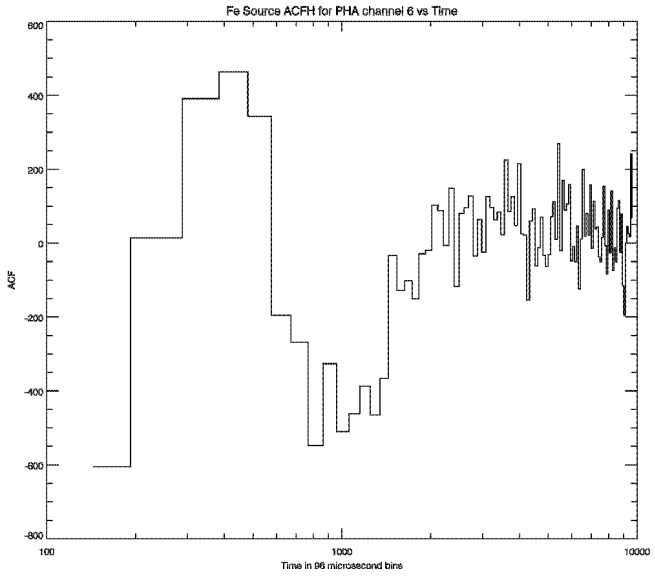












Crab Data, Pre-current DatToFits (Run 1-01). No OOE, Detector 0 only, Preliminary